

REMARKS

Applicant concurrently files herewith an Excess Claim Fee Payment Letter for four (4) excess total claims.

Claims 1-24 are all of the claims presently pending in the application. Claims 1 and 3-4 have been amended to more particularly define the invention. Claims 10-24 have been added to claim additional features of the invention.

As a preliminary matter Applicant would like to thank the Examiner for courtesies extended to Applicant's representative in the productive personal interview conducted on December 8, 2004.

In the interview, Applicant's representative provided a detailed explanation of the claimed invention and pointed out to the Examiner each of the claim elements which are neither disclosed nor suggested by the prior art.

A detailed Statement of the Substance of the Interview is included in the remarks below.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-7 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Uemura (APA) (United States Patent Application Publication No. 2002/0040982). Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Uemura.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by exemplary claim 1) is directed to a light-emitting device. The light-emitting device includes a semiconductor light-emitting element using a substrate surface as a light-extracting surface and a mount frame on which the semiconductor light-emitting element is mounted and which has a reflecting portion for reflecting light emitted from the substrate surface. The mount frame has a swollen portion formed with the light reflecting portion so that part of the substrate surface is supported by the

swollen portion to thereby mount the light-emitting element on the mount frame, the swollen portion having a substantially flat top surface to support the substrate surface.

Conventional light-emitting devices have been designed for mounting a main light-emitting surface of a light-emitting element without the use of a sub-mount. However, it is difficult to provide sufficient thermal conductivity to the light-transmissive member to release heat caused by light emission. As a result, when a high-output light-emitting element is mounted, there is a possibility that the life of the light-emitting element may be shortened because of insufficient heat radiation. It is also difficult to give the light-transmissive member sufficient mechanical stiffness. Accordingly, there is a possibility that the quality of the light-emitting device may vary.

The claimed invention of exemplary claim 1, on the other hand, provides a light-emitting device including a swollen portion formed with the light reflecting portion so that part of the substrate surface is supported by the swollen portion to thereby mount the light-emitting element on the mount frame, the swollen portion having a substantially flat top surface to support the substrate surface (e.g., see Application at page 14, lines 12-16 and Figure 3). Because the substrate surface of the light-emitting element is supported by the swollen portion of the mount frame, heat generated in the light-emitting element can be released to the mount frame through the swollen portion. Accordingly, the heat-radiating characteristic is improved so that the durability of the light-emitting device is improved (see Application at page 5, lines 6-17).

II. STATEMENT OF SUBSTANCE OF INTERVIEW

In the personal interview conducted on December 8, 2004, the following was discussed:

1. *Identification of claims discussed:*
All of claims 1-24, including new claims 10-24.
2. *Identification of prior art discussed:*
Uemura (APA) (United States Patent Application Publication No. 2002/0040982)
3. *Identification of principal proposed amendments:*
Applicant's representative discussed proposed editorial amendments to claim 1. The

proposed editorial amendments are identical to the editorial amendments set forth in this current Amendment. Applicant's representative did not propose any substantive amendments to the claims.

4. *Brief Identification of principal arguments:*

Applicant's representative explained the invention and argued that Uemura does not disclose or suggest a swollen portion that supports the light-emitting element because Uemura does not teach or suggest that a part of the substrate surface is supported by the convex surface.

5. *Results of the interview:*

The Examiner indicated that although he was not persuaded by the arguments presented by Applicant's representative, there were several structural features included in proposed new claims 10-24 that would likely overcome the current prior art rejection.

III. THE PRIOR ART REFERENCE

The Examiner alleges that Uemura teaches the claimed invention of claims 1-7 and 9. The Examiner further alleges that the claimed invention of claim 8 would have been obvious in view of Uemura. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Uemura.

That is, nowhere does Uemura teach or suggest a light-emitting device "*said swollen portion comprising a substantially flat top surface to support said substrate surface*" as recited in claim 1.

As noted above, unlike conventional light-emitting device, the claimed invention provides a light-emitting device including a swollen portion formed with the light reflecting portion so that part of the substrate surface is supported by the swollen portion to thereby mount the light-emitting element on the mount frame, the swollen portion having a substantially flat top surface to support the substrate surface (e.g., see Application at page 14, lines 12-16 and Figure 3). Because the substrate surface of the light-emitting element is supported by the swollen portion of the mount frame, heat generated in the light-emitting element can be released to the mount frame through the swollen portion. Accordingly, the heat-radiating characteristic is improved so that the durability of the light-emitting device is

improved (see Application at page 5, lines 6-17).

The novel features of the claimed invention are not taught or suggested by Uemura. Indeed, the Examiner alleges that Uemura teaches a substrate-emitting III-N LED is mounted on a convex or “swollen” portion having an inclined surface of a reflective mount frame by means of a light transmissible material. The Examiner attempts to rely on Figure 7 and paragraph [0068] of Uemura to support his allegations. The Examiner, however, is clearly incorrect.

Nowhere, in this figure or passage (nor anywhere else for that matter) does Uemura teach or suggest a light-emitting device including a swollen portion formed with the light reflecting portion so that part of the substrate surface is supported by the swollen portion to thereby mount the light-emitting element on the mount frame, the swollen portion having a substantially flat top surface to support the substrate surface. Indeed, Figure 7 and paragraph [0068] of Uemura provide no support for the Examiner’s allegations.

That is, Uemura merely teaches a light-emitting device 10 formed on and supported by a light transmissible material 71. Uemura discloses that a bottom portion of a reflection surface 72 of a recess portion 74 of a mount frame 73 is formed into a convex surface (see paragraph [0069] of Uemura). However, Uemura does not disclose or suggest that a part of the substrate surface is supported by the convex surface (see Figure 7 of Uemura).

As shown in Figure 3 of the Application, the light emitting element 10 is clearly supported by the swollen portion 31. This feature is not taught or suggested by Uemura. Even assuming, *arguendo*, that Uemura teaches a swollen portion supporting a part of the substrate surface, Uemura does not teach or suggest that the swollen portion has a substantially flat top surface to support the substrate surface. The convex portion of the reflection surface 72 of Uemura, as is shown in Figure 7 of Uemura, is clearly not flat, but curved. The flat surface of the swollen portion of the claimed invention allows the swollen portion to stably support the light-emitting element. This feature is not taught or suggested by Uemura.

Therefore, Applicant submits that there are elements of the claimed invention that are not taught or suggest by Uemura. Therefore, the Examiner is respectfully requested to withdraw this rejection.

IV. NEW CLAIMS

New claims 10-24 have been added to provide more varied protection for the claimed

invention and to claim additional features of the invention. These claims are independently patentable because of the novel features recited therein.

Applicants respectfully submit that new claims 10-24 are patentable over any combination of the applied references at least for analogous reasons to those set forth above with respect to claims 1-9.

V. FORMAL MATTERS AND CONCLUSION

Applicant respectfully requests acknowledgement and receipt of the priority document filed with the Application on September 17, 2003.

In view of the foregoing, Applicant submits that claims 1-24, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date: December 20, 2004

Respectfully Submitted,



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